



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/473,315      | 12/28/1999  | LARRY EUGENE MOSLEY  | 884.209US1          | 9830             |

21186 7590 10/22/2002

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.  
P.O. BOX 2938  
MINNEAPOLIS, MN 55402

EXAMINER

THOMAS, ERIC W

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2831

DATE MAILED: 10/22/2002

19

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/473,315

Applicant(s)

MOSLEY, LARRY EUGENE

Examiner

Eric W Thomas

Art Unit

2831

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2,3 and 5-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,3 and 5-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### Introduction:

The examiner acknowledges, as recommended in the MPEP, the applicant's submission of the amendment dated 7/29/02. At this point, claims 1, & 4 have been cancelled; claims 2, 5-6, & 9 have been amended. Thus, claims 2-3, 5-12 are pending in the instant application.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

- (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
- (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

2. Claim 5 is rejected under 35 U.S.C. 102(e) as being anticipated by Naito et al. (US 6,034,864).

Naito et al. disclose in fig. 2A, a capacitor comprising at least four conductive layers (33-34) embedded in a dielectric; and a plurality of vias (40-41) coupling the at least four conductive layers to a plurality of connection sites (38-39) and the vias are plated through-holes.

3. Claims 5, 9-10, are rejected under 35 U.S.C. 102(e) as being anticipated by Farooq et al. (US 6,072,690).

Farooq et al. disclose in fig. 3C, a capacitor comprising: at least four conductive layers (67, 68) embedded in a dielectric; and a plurality of vias (64, 66) coupling the at least four conductive layers to a plurality of connection sites (69) wherein the vias are plated through-holes.

Regarding claim 9, Farooq et al. disclose in fig. 3 A, a multilayer capacitor having a pair of outer surfaces (see below), and a number of pads (69) located on two of the number of outer surfaces; wherein two of the number of pads are capable of being coupled to a substrate using a solder bump. Although Farooq et al. do not expressly state that the outer surfaces are "substantially rigid"; it is an inherent feature of the capacitor of Farooq et al. (see method of forming the capacitor – a fired ceramic green sheet produces a "substantially" rigid surface).

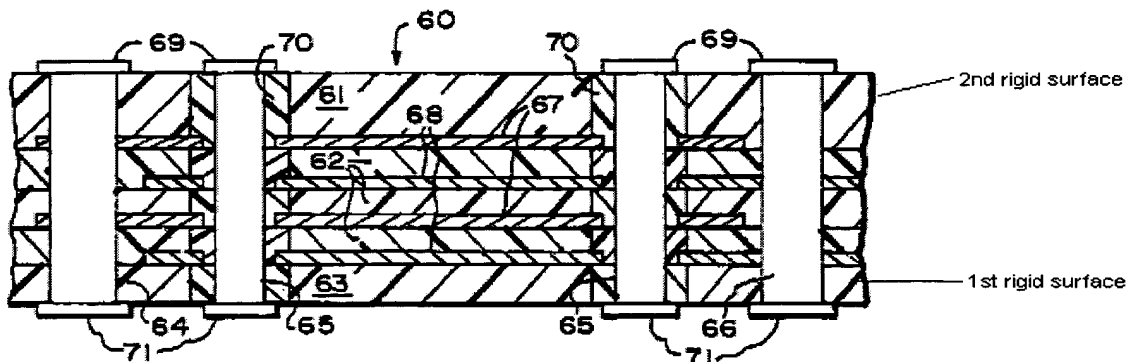
Regarding claim 10, the multilayer capacitor includes a number of parallel conductive layers and the number of pads coupled to the number of parallel conductive layers through vias.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 2-3, are rejected under 35 U.S.C. 103(a) as being unpatentable over Farooq et al.



Regarding claim 2, Farooq et al. disclose at least four conductive layers embedded in a dielectric; and a plurality of vias coupling the at least four conductive layers to a plurality of connection sites. Farooq et al. disclose the claimed invention except for the thickness of the capacitor being between about 0.5 millimeter and about 1 millimeter.

It would have been an obvious matter of design choice to form the capacitor having a thickness of 0.6 millimeters, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re. Rose*, 105 USPQ 237 (CCPA 1955).

Regarding claim 3, Farooq et al. disclose the claimed invention, except for the capacitance being from 20 to 30 microfarads. It is well known in the capacitor art to form capacitors having a particular capacitance for an electrical system. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the capacitor of Farooq et al. having a capacitance of 20 to 30 microfarads, since it has been held that discovering an optimum value of a result effective variable

Art Unit: 2831

involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Claims 6-8, & 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farooq et al. (US 6,072,690).

Regarding claim 6, Farooq et al. disclose (in fig. 3c) a plurality of first conductive layers (67), each of the plurality of first conductive layers formed on a first dielectric sheet (72); a plurality of second conductive layers, each of the plurality of second conductive layers formed on a second dielectric sheet (72), and the plurality of second conductive layers interlaced with the plurality of first conductive layers; a pair of dielectric sheets (see below) having a thickness, for providing a pair of substantially rigid outer surfaces for the plurality of second conductive layers interlaced with the plurality of first conductive layers, each of the pair of substantially rigid outer surfaces having a plurality of connection sites operable for coupling the capacitor to a substrate using a controlled collapse chop connection (C4); and a plurality of vias (64, 66) coupling the plurality of first conductive layers and the plurality of second plurality of second conductive layers to at least two of the plurality of connection sites.

Farooq et al. do not disclose the thickness of the pair of dielectric sheets having a thickness of slightly greater than 7 microns. It would have been an obvious matter of design choice to form the pair of dielectric sheets having a thickness of slightly greater than 7 microns, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. *In re. Rose*, 105 USPQ 237 (CCPA 1955).

Art Unit: 2831

Regarding claim 7, Farooq et al. disclose the claimed invention except for the material used in the conductive layers. Tungsten paste is a well-known material used as electrodes in the capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the conductive layers of Farooq et al. using tungsten paste, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. In re Leshin, 125 USPQ 416.

Regarding claim 8, Farooq et al disclose the number of surfaces is two.

Regarding claim 11, Farooq et al disclose the claimed invention except for the number of conductive layers is greater than about 50. The capacitor of Farooq et al. is not limited to the illustrated embodiments. It is well known in the capacitor art to use more than 50 electrode layers (conductive layers) to form a capacitor (in efforts to increase capacitance). It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a capacitor having more than 50 layers of electrodes, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. St. Regis Paper Co. v. Bemis Co., 193 USPQ 8.

Regarding claim 12, Farooq et al. disclose the claimed invention except for the number of pads is greater than about 4000. The capacitor of Farooq et al. is not limited to the illustrated embodiments. It is well known in the capacitor art to use more than 4000 connecting pads. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form a capacitor having more than 4000 pads,

Art Unit: 2831

since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ.

***Response to Arguments***

1. Applicant's arguments filed 7/29/02 have been fully considered but they are not persuasive.

--Applicant's argument regarding claims 6-12 have been addressed in the action dated 8/13/01.

--Regarding applicant's argument that the Farooq et al. patent does not disclose, "the vias are plated through holes": Farooq et al. disclose in col. 6 (method 1) that the vias are "plated". It should be noted that the final product of Farooq et al. has the same final structure as the instant application (see fig. 3C of Farooq et al. & fig. 1A of the instant application).

--Regarding applicant's argument that the Naito et al. patent does not disclose, "the vias are plated through holes": Naito et al. disclose in col. 5 lines 35-40 that the vias are "plated". It should be noted that the final product of Naito et al. has the same final structure as the instant application (see fig. 2A of Naito et al. & fig. 1A of the instant application).

--Regarding applicant's arguments that *In re Rose*, 105 USPQ 237 (CCPA 1955) & *In Re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) are not applicable to capacitor design: The examiner relies on the teachings of *In re Rose* & *In re Boesch* (A change in size is generally recognized as being within the level of ordinary skill in the art



Art Unit: 2831

& that discovering an optimum value of a result effective variable involves only routine skill in the art) not the art to which it pertains.

***Conclusion***

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric W Thomas whose telephone number is (703) 305-0878. The examiner can normally be reached on Mon & Sat 9:00AM - 9:30PM; Tues-Fri 5:30PM-10:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 703-308-3682. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.


Application/Control Number: 09/473,315

Page 9

Art Unit: 2831

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

ewt  
October 15, 2002

  
ANTHONY DINKINS  
PRIMARY EXAMINER